"How to Learn Muscle Control"

BY
OTTO ARCO
AND
ALAN CALVERT

THIS article, which is the first of a series, is the joint work of Otto Arco and myself. The division of labor is somewhat unequal. Arco does all the work of posing and supplies all the details of instruction. All that I do is to get the material together, to expand his all-too-brief notes, to comment on his ideas and attend to the publication.

Personally I have been familiar with the subject of muscle-control since thirty years ago, when I saw it demonstrated by Checkley, by Sandow and by the dozens of performers who imitated his posing act.

Sandow used muscle-control as a part of his posing; that is, many of his poses depended for their effectiveness on his ability to control, and thus display, his muscles. Those who reproduced his act, reproduced his poses, as well as they could; but there was no decided advance in the art of muscle-control until Arco came along.

He not only was able to duplicate all the control feats of his predecessor, but by reason of his study and knowledge, could and did, originate a lot of new feats; getting his own muscles under the control of his will to a degree that no one else has been able to even approximate—much less equal.

He taught much of what he knew to some of his personal friends and fellow artists, and there have been courses issued by others, courses based on information received from Arco. Which bothered him not at all. "For," as he says, "muscle control is a good thing for anyone to have. If I have helped these other fellows to teach it, I feel I have done both them and the public a good turn."

Since he has lived in the country he has been a perfect mine of information to those enthusiasts who are interested in the subject. Time and again, he has given up his time to answering letters begging for instruction on matters of detail; and has done so out of the kindness of his heart.

In that connection I must here say that Arco is an extremely busy man, with but little time for letter-writing. A set of articles like this, is sure to give some of you the idea of writing for personal advice. At present it is impossible for either of us to give personal instruction, but if any of you think that he must write to Arco, then please address your letter to him in care of this magazine. If your letter raises a question of *general*

interest—something which if answered would help other enthusiasts—it will be probably answered in these pages. If on the other hand the question is entirely personal, the letter may not be answered. Arco is working on this series at a considerable sacrifice of his own time and convenience; so let's not make it hard for him by asking him for purely personal service.

Shortly after this series was announced, Arco had to leave for an extended tour of the Orpheum Circuit; so some of you who live in the west have had the opportunity to see his act; and you probably noticed that his posing, his series of muscle control stunts, interested the audience even more than did his remarkable acrobatic feats.

His ability to make his muscles perform, his ability to control them, is positively weird; and seemingly his audiences are fascinated by his ability in that line.

He writes me that whenever he plays a return engagement at a theatre, the manager is almost sure to ask him to alter his act, so as to give more posing.

So he knows that people like his posing. He realizes that many who follow out these instructions will do so for the purpose of becoming able to amaze others by demonstrations of almost unbelievable control of the muscles.

But he contends that posing is merely a side issue. The main purpose of muscle-control is self-mastery. Muscle control involves far more than the mere ability to make the muscles contract. It teaches you to relax, which is sometimes even more important than contraction. It gives you a selective control, and therefore the ability to single out those muscles necessary to the work to be done, and *only* those muscles; leaving the antagonistic, or non-helpful, muscles relaxed. That makes a saving of energy in two ways; since it enables you to put all your energy into stimulating the needed muscles, and relieves those muscles of the interference of needlessly flexed antagonistic muscles.

Muscle control, which leads to body-control, is a great factor for success in all competitive sports. Your ability to shine in any outdoor game rests in your ability to make your body do exactly what you want it to do. Bodily control is the secret of that skill which is dependent on co-ordination and timing. As an illustration. Consider the style of a champion golfer as compared to a beginner. The expert makes his shot with perfect smoothness and rhythm, getting great distance and extreme accuracy, without any noticeable muscular exertion. He has his arms and body so thoroughly under control that he can perform any shot needed. The novice holds himself nervously tense, uses only his arms instead of employing a body swing, and gets nowhere. Only by repeated practice can he will his body so that it will respond to the commands of his will. Any golf instructor will tell you that there are some beginners who seem to be utterly lacking in body control. They cannot make their bodies behave, cannot carry out a single command; such as shifting the weight from one foot to another, executing a body swing, or a follow through; and even cannot imitate movements made by the instructor. Such men lack that bodily mastery which depends on muscle control.

It would be possible to go in and give several instances of the importance of bodily control in other sports, tennis, baseball, billiards, rowing, etc.

But Arco claims that the benefit that comes from learning muscle

control is not limited to its application to athletics. He says that it is even more helpfulness to the nervous system than to the muscles; because as each muscular contraction is the result of a nerve message your practice brings the nerves under control; not only gives you the power to stimulate the muscles to greater effort, but also enables you to relax, at will, both the nerves and muscles.

Anything which increases the domination of the mind over the body is a good thing. And anything which gives one "nerve," and cures "nerves," is likewise a good thing. You can use this muscle-control as a basis of acquiring will-control and nerve-control. If you happen to be a baseball pitcher you cannot only get that kind of muscle and body control which enables you to throw a ball how and where you want it to go; but you can further acquire that self-control which enables you to pitch perfectly in unfavorable conditions and before a hostile crowd.

Arco claims that learning muscle control will enable you to control your temper, to control your habits and, through strengthening your will power, to control your morals. That sounds like a large order, as though he was claiming too much; but the fact remains that will-power can be developed just the same way that a muscle can; *viz.* by intelligent use.

Neither Arco nor I claim that this practice of muscle-control will make the muscles very much bigger. But it will make them stronger by making them more alive, more responsive to the will, and it will alter and improve their shape because certain of the stunts can be performed only by the ultimate contraction of some muscles; and those muscles have to be gradually educated up to the point where they can make these extreme contractions.

There are other benefits which can be mentioned. This first article deals entirely with control of the upper back muscles, but where you come later on to the studies of abdominal control you will find that they will be of a great advantage to your digestive organs; the practice of the stunts affording the organs a sort of natural massage which does for them just what the rational exercise does for the muscles.

Personally I recommend all these muscle control stunts because they will help you in acquiring posture and balance and that absolute correctness of muscular co-ordination which does so much to promote the automatic growth of muscular tissue.

When I have trouble in teaching posture, it is because the man I am talking to is utterly unable to control the separate parts of his body. If I tell him to throw out his chest, he pulls back his shoulders; having no ability to move the chest independently of the shoulders. When I tell him to lift the front of the hips, he does just the opposite; and if I tell him to try and straighten the lower half of his spine, he is as helpless to obey as if I had asked him to do some difficult contortion stunt. I know that this muscle control will help in that respect.

INSTRUCTIONS

Before you can control your muscles, the first thing to learn is relaxation. When giving instruction in piano playing Padarewski will use the word "relax" dozens of times in one lesson. It is impossible to teach any set of muscles to contract in a certain way, to do something new, if the proper action of these muscles is limited and hampered by the contraction (tension) of other neighboring muscles.

So, you will find at the start that some of those stunts are impossible of performance unless you start off by relaxing; and that when Arco says to *relax* certain muscles he *means* it.

Take for a start the control of the shoulder blades, or to be accurate of the muscles which move the shoulder blades. It is a curious co-incidence that I should have written that editorial about the collar bones just before I started to prepare this article. Look at the pictures on pages 15 and 16. That exercise is really a muscle-control stunt; and for the shoulder blades. It is a simple elementary movement, which nevertheless, some of you will find it difficult to do at your first attempt. Now read on and see how much more completely and effectually Arco teaches you this control of the shoulder blades. He says; *first,* to sit in an arm-chair with your elbows resting on the chair-arms, and all your muscles relaxed. Now try and shrug your shoulders. In an ordinary shrug you would raise your shoulders towards your ears; but if you keep your arm muscles relaxed and *your* elbows against the arms of the chair, why! then your shoulders *cannot* rise. But the effort to "shrug" will result in a slight lifting of the shoulder-blades. You can feel them moving under the skin; feel them moving away from the ribs. With each day's practice you will gain extra control, become able to move the blades more and more independently of the rest of the body; and the blades instead of being muscle-bound, as before, will become looser; and you will have consequently more "play," more range of movement in the shoulders themselves.

The next step is to learn to do the same thing with the arms held out straight to the sides. Keep your arms still, with their muscles relaxed, and shrug the shoulders. You can easily tell whether you are successful by the feel of the shoulder-blades moving; crawling as it were up and down the back.

Then stand in front of your mirror with arms outstretched, and body completely relaxed. Jam your shoulder-blades together until they touch; then spread them as you would if you wanted to reach the furthest distance possible to the sides. (Same as on pages 15 and 16 A. C.)

Next try to do the *shrug* as you spread the blades (as in Figure I); and relax the dorsal muscles (letting the shoulders drop) as you "jam"; and you will find that the shoulder-blades have been curling *outwards.*

Next—*relax* the back muscles *when spreading,* and *shrug as you jam* the shoulder-blades together, as in Figure II; and your shoulder-blades will circle inwards.

A good way of learning these movements is to stand with your back to a wall opposite the mirror; with your arms outstretched, and try to describe circles with your *shoulders.* Not with your *hands,* mind you; for the arms are always horizontal and relaxed; but the points of the shoulders should describe circles. Therefore watch not the arms but the shoulders. Don't be discouraged, if at first the movement is small. It is bound to be small in the case of every beginner, but the more you learn to control the blades, the more "play" there will be in the shoulders; and the more spectacular will be the movement.

The next exercise is the same, but instead of holding the arms out straight, as in Figures I and II, you bend them at the elbows as in Figures III and IV. ("If you do it this way, you somehow get the latissimus dorsi muscles spread further out to the sides. I can make myself two inches

FIGURE I

wider across the back when I bend the elbows than when I hold the arms straight. I think I must have raised my shoulders, instead of spreading them, when posing for these two pictures as I should have looked much wider than I do."—*Arco.*) In the four preceding stunts it is very important to keep the arm muscles and trapezius muscles relaxed at all times; as that allows you to get the control of the back muscles which move the shoulder-blades.

Before attempting the next three stunts you should make a small ring of rope, or heavy cord, the ring to be about three inches in diameter. Slip the fingers in the ring, raise the arms straight above the head (reaching as high as possible), relax the shoulder muscles, keep the arms rigid, and then pull hard against the rope ring, as though you were trying to break it by moving the hands sideways and away from each other. Particular care should be taken *not* to bend the arms at the elbows.

If you do this while standing in front of a mirror, and if you will follow the directions properly, you will notice that the sides bulge a little bit, just below the level of the arm-pits. With each day's practice the bulge will become greater until finally the projections caused by the movement of the shoulder blades will appear as half circles as shown in Figures V, VI, and VII.

Supposing that you had your hands aloft as in Figure VII, *without* holding the rope ring or interlacing your fingers. When you brought the arms sideways and downwards, the motive power would be supplied by the muscles on the upper back; which are attached to the upper arm bones, and which by their contraction bring the arms down. But when you *do*

FIGURE II

hold the rope-ring and pull vigorously against it, those back muscles contract; and because the arms are held together with the rope ring the effect is to lift the shoulder-blades apart.

When you first try it all your efforts should be devoted to pulling hard against the rope ring. As the practice continues, and the movement of the shoulder-blades becomes greater you should lessen the pull with the hands and concentrate on projecting the shoulder-blades to the sides.

After you have had fair success with No. VII try the same thing with the hands on top of the head as in Figures V and VI. When the arms are bent in this way it is more difficult to spread the shoulder-blades, and so this stunt is possible only after you have thoroughly mastered the stunt shown in Figure VII. In Figure VI you can just barely see the rope ring to which Arco is holding. Of course he can do this stunt without either holding on to a ring, or even clasping the hands; because he has his shoulder-blades under perfect control of his will. In conclusion, you must remember that you will not be able to accomplish either of the stunts shown in Figure V or VII unless you *raise the shoulders as high as possible* before you start to force the shoulder-blades apart. Also bear in mind that your control of the shoulder-blades is just as much dependent on your ability to relax some of the muscles, as it is on your ability to contract other muscles.

The odd effect in Figures V, VI and VII is due to the fact that the lower points of the shoulder blades have moved upward and outward.

Now, when the blades are in a *normal* position, they are maintained in that position by the combined action of several muscles. To make the lower points of the blades travel outward to the side, as in Figure VII, you have to contract the muscles which pull the points outwards, while relax-

FIGURE III

ing the opposing muscles, which, if contracted would pull the lower part of the blades inward and towards the spine.

That sounds rather complicated but it is something which you *must* understand before you can make any great progress in these, or in the following, stunts of muscle control. In the present case, if you flexed *all* the muscles attached to the shoulder-blades, and flexed them all with equal vigor, then the blade would remain immovable; but by flexing one set of muscles and relaxing its opposing set you can make the shoulder-blades move in almost any direction you wish.

Arco says that if you can master shoulder-blade control by continual practice, the very fact that you have subjected the upper back muscles to the control of the will, will make it easier for you to get a mental domination over the other muscles.

In learning to control the shoulder-blades in the four previous stunts you obtained a certain measure of control of the *trapezius* muscle; since in one or two of those movements the trapezius had to be contracted, and in the others had to be relaxed. Never forget that the word control means ability to *relax* the muscles at will, just as much as to contract them. The purpose of the stunts shown in Figures I to VII was, *first*, to enable you to move the shoulder-blades to and from each other (spread and jam); and, *second*, to move the lower points of the blades outward and upwards. The purpose of the next two stunts is to give you the power to control the trapezius (and some of the other muscles attached to the shoulder blades) so that you will be able to move the inner *edges* of the blades away from the spine.

FIGURE IV

Start out by gripping the rope-ring above your head as in Figure V; relax the shoulders and the back muscles completely. Keep pulling hard against the cord ring and slowly lower your outstretched arms to the front (in a half-circle movement,) until the hands are in front of the abdomen as in Figure VIII. (Arco has discarded the ring and is pulling on his left wrist with his right hand.) As your arms come down you will feel the inner edges of the shoulder-blades—the edges nearest the spine—pushing outwards against the skin. Then if you tilt your head back, the trapezius muscles will contract and stick out in those two huge lumps shown in Figures VIII and IX between the sides of the neck and the points of the shoulders.

The last stunt in this lesson is the one shown in Figure X. Rest the back of the hands against the lower part of the spine, and then press as hard against your back, with the back of the hands *as you possibly* can; at the same time raise your head up and tilt it back. This will make the inner edges of the shoulder-blades project slightly; and with practice you will finally be able to make them stick out as far as Arco's are in the picture.

I am fully aware that when some of our readers first see the accompanying pictures they may think that it would be foolish to put in a lot of time practicing for the sake of being able to distort their bodies into such positions. These pictures are spectacular, but to some they will seem unsightly. So I wish to repeat that the main object of the training is not the poses themselves, but the muscle control which makes those poses pos-

FIGURE V

sible. In other words the poses are not the end, but the means of training—of bringing all the body under the domination of your will.

As stated in the first part of this article both Mr. Arco and I are willing to answer questions in the pages of this magazine. I prepared this article under difficulties. Arco is a couple of thousand miles away, whereas he should have been sitting right along side of me to help me with his advice. When I requested him to pose for the pictures I suggested that in each pose he would flex only the muscles necessary to the performance of each stunt and he should deliberately relax all the other muscles of the body. He highly approved of this idea and carried it out except in one or two instances, when he obviously forgot himself. You see it is this way. When Arco is posing on the stage he always makes his body look its very best. Even if he is doing a stunt of abdominal control he will flex the muscles of his arms, shoulders, and legs so as to get a good *general* effect. It has become sort of a habit with him. But in pictures V, and VI he has flexed *only* the upper back muscles. I have other pictures showing him in this same pose where his shoulder blades project just as much, and where his upper arms look very much bigger and where the chest and abdomen are strongly flexed. Those pictures are much more wonderful than Figures V and VI, both because they show this power of simultaneous

FIGURE VI

control over all his muscles, and because his arms and the front half of his body are so impressive. So don't judge from the way Arco looks by those pictures V and VI. In them he is deliberately letting his arms relax to show you how *you* should let *your* arms relax.

If you will refer back, you will see that Arco said that in doing the stunts shown in I and II *all* the muscles should be relaxed. The next time I see him I am going to ask him to explain why it is that the upper arms and deltoid muscles are relaxed in Figure I and why they are so strongly flexed in Figure II. Whether the act of spreading the shoulders apart caused a contraction of the triceps and deltoids, or whether he forgot himself and flexed those muscles in doing pose II? The difference is very apparent in the two pictures. In I the right triceps is relaxed and hanging of its own weight. In II it is strongly contracted and the upper arm looks very much bigger than it does in Figure I.

You have thirty days in which to practice this group of stunts, but even in that length of time you can make considerable progress, *if* you devote a few minutes daily to practice. The difference between muscle control and other forms of exercise is, that muscular control does not produce any exhaustion; though it may cause local soreness. In fact Arco says that to master the pose shown in Figure VII may cause considerable pain and that the more pain you can stand the quicker progress you will make.

might think it would be hard to get the points of the blades back again where they belong, that is under the top edge of the latissimus, but they seem to slip back naturally into place. You need not be afraid of any permanent dislocation, for as you gain the ability to move the blades, at the same time you gain an equal ability to replace them.

In writing the foregoing I have attempted to have it as accurately as possible the instructions given in Arco's notes.

I frankly confess that there are one or two points which are obscure to me, and in which I put my own interpretation. For example, Arco says that the pectoralis says relax the *fore* muscles. Now, as I understand it, this is a misnomer, for it is a chest muscle. I have asked Arco for an explanation of this, but will be included in the next issue.

You will notice that Arco uses the word shrug in a different sense from what I would use it. If you, or I, were to shrug our shoulders we would lift the points of the shoulders two or three inches, till they were level with the bottom of our ears. But Arco uses the word shrug his shoulders that way, in fact I have often noticed that he has the habit of shrugging as a substitute for saying unpleasant things. If one is to the street car is stealing his seat or is chuming around for something to put on, he shrugs a question to which his answer would disturb him. In the case he neither protests in the first instance nor does he reply in the second, but dismisses the disagreeable subject with a philosophical shrug of the shoulders. And when he shrugs he lifts the points of his shoulders very little. It sort of flattens up the shoulders and neck very much, as in Figure VIII. So the question arises whether in the first stunt, Figures I and III, when he says shrug he means to lift the points of the shoulders as he seems to have done in Figure I, or whether he wants you to shrug as he does now, contract not the trapezius muscle. Likewise you are never to lift the *shoulders* as you will find it much easier to get by rotating the shoulder blades than if you were to shrug by a contraction of the trapezius muscle.

This set of muscle-control stunts will be of great help to anyone who is troubled by projecting shoulder blades. There are quite a number of people whose shoulder blades project at all times, not as much as in Figure X, perhaps, but still there will be a distinct ridge on either side of the spine, caused by the outward pressure of the inner edges of the shoulder blades. I have been consulted in many such cases, and I could tell that some of those who wrote to me actually *thought* that they were abnormal, whereas the cause of the trouble was nothing more than a bad muscular habit. There are some physical culturists who evidently think that a large neck is a sign of strength and in order to make the neck appear large they "puff out" the shoulders. That is bound to make the shoulder blades project.

The cure is to relax the trapezius muscles, and, after that is done, the blades will immediately fall into their normal position, and the upper back will be flat and smooth, instead of being deformed with the two projecting ridges. So any of you that suffer from that disfigurement can remedy it by learning to relax. You will notice that Arco places a great deal of emphasis on this power of voluntary relaxation.

FIGURE IX

muscle developers and in this muscle control section I apparently reverse myself and recommend exercises which are to be practiced every day. All I can say is that these muscle control stunts are extra [illegible] *studies*. The purpose in doing them is not just to exercise the muscles but to develop the power to increase their power to contract or relax at the dictate of your will. I know men who have used [illegible] dumb-bells and light dumb-bells for a half-hour every day exercising muscles and yet after all their training are not able to even the simplest stunts of muscle control. In the [illegible] I have never known a man to lose the power of controlling his muscles once he has acquired it.

You will find some of these stunts very hard to learn. But it is [illegible] master. Once you have mastered the art of muscle control [illegible]

A man whose muscles are merely large and powerful [illegible] master muscle control. Many well [illegible] men whose muscles have never been exercised. The trained gymnast or the accomplished athlete whose success is due to his ability to use his muscles will master muscle control stunts with comparatively little trouble. But the man who has muscles because his [illegible] neglect of exercise, or by allowing his body to sag, will find that he must master the stunts. The [illegible] men are exactly the ones who most need to learn muscle control. An exercise involves alternate relaxation and contraction of the muscles. In learning these muscle control stunts you get that muscular contraction and relaxation without the exhaustion attendant on the performance of strenuous movements, boxing exercises, or the more violent forms of sport and athletics.

FIGURE XI

[illegible] to the [illegible] lesson [illegible] he was [illegible] to tell you something [illegible] particular secret [illegible] 50 percent [illegible] 100 percent [illegible] I asked him [illegible] he would not give me [illegible] lesson to which he replied that [illegible] at the start would only confuse [illegible] the [illegible] piano player unless he plays with expre[illegible] it would [illegible] great mistake to try and teach musical [illegible] the piano. First of all, he must learn the not[illegible] He must get his technique and [illegible] he [illegible] ly, [illegible] would distract hi[illegible] to unique of piano playing. These readers of you[illegible] must first learn the [illegible] of contraction [illegible] Then they have learned [illegible] secrets which wi[illegible] make them *great* at muscular control.

What these secrets are [illegible] and pass them on [illegible] without realizing that I was doing it.

[illegible]

[illegible]

How to Learn Muscle Control

(Second Lesson)

BY

OTTO ARG

AND

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LET us start by assuming that you have practiced the stunts shown in Figures I to IV in the August issue, that you have advanced so far that you can move the shoulder blades up or down, or towards or away from the spine, when you have your arms hanging out to the side. Perhaps you have gone even further and can move your shoulders in sidewise circles as suggested by Arg.

If so, you have made a start. Now let's start "from scratch" and thereby move some part of the body in contraction, whenever a place he leads jumps in a position to do that contraction. It becomes difficult when you attempt to make the contraction without the assistance of the other parts. If you extend the arms sidewise and raise far enough with both hands or both elbows, then the shoulder blades simply have to move away from each other. The test of your control is whether or not you can stand with the arms hanging, drop at your sides, and then spread the shoulders apart, by merely *willing* them to move.

Again, while you will very soon learn to thus spread the blades apart or, what is easier, to squeeze them together, you will have some trouble in learning to raise and lower them.

Undoubtedly, it helps you to get this power of up and down movement if you first move the shoulders up those sidewise circles. That is, move the points of the shoulders, since the shoulder blades being fastened to the shoulder point have their position affected by every movement of that point. And just as soon as you can move the shoulder blades in that way, *then* you must learn to keep the shoulders themselves motionless and make the shoulder blades circle around apparently of their own will and volition.

Perhaps your shoulders *will move* a little at first, especially

this stunt in their posing acts. Although you are not apt to do any public posing, you should include this in your practice because it helps to give you control; the power of voluntary movement of one of a pair of muscles.

You will find as you advance in this game that when there are a pair of muscles—one on either side of the medial line, (*i.e.*, a right and a left) it is easiest to flex them simultaneously. And that it requires a new degree of concentration and control before you can relax one of the pair and make the other work independently.

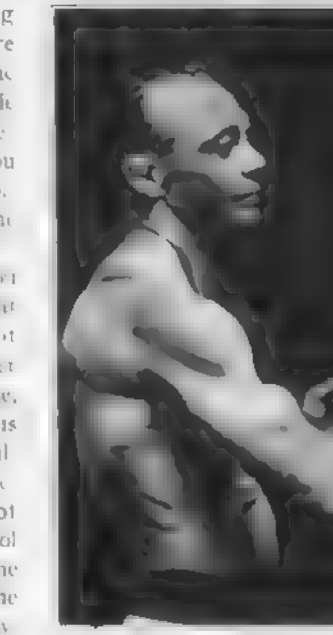


Figure XIV

Attached to the ribs are a set of muscles known as the ***serratus magnus,*** which are attached at their rear ends to the inside of the shoulder blades—pass between the shoulder blades and the ribs—and are fastened at their front ends to the ribs themselves. You can see them in Figure XIV on either side of the chest. In most men they are so little developed that they do not affect the surface form but in powerfully developed men they are very prominent. You will see them outlined on the bodies of many of the ancient statues particularly when the subject is represented in vigorous action.

(These muscles appear on the sides of the chest as a series of digitations—resembling a row of saw teeth.)

These muscles are involved in the control of the shoulder blade, since when the chest is inflated and the ribs fixed in position the contraction of the *serratus magnus* muscle spreads the

If you are a student of anatomy and have developed men around you you have noticed that these serratus magnus muscles are to be seen on the *best* developed men. You will see pictures of many engravers who show the arms, and shoulder muscles, and well defined and clean-cut muscles on the breast, also men and upper back. But rarely do they reveal even an indication of the serratus muscle. Every athlete has them of course, but in most cases they are less developed than any others on the body and in many cases the men may not know how to display them.

One reason [illegible] is because they are so neglected that such a small part of them are to be seen. On the [illegible] parts lie right under the skin of greater prominence [illegible] by the skin [illegible] muscles. Again these muscles are [illegible] by the [illegible] and the shoulders [illegible] function is more to [illegible] the [illegible] elbow. One authority says that these are the muscles which impart most of the power when a fellow makes a [illegible] and that [illegible] they must be [illegible] pound and must help in throwing a ball.

[illegible] men with merely developed [illegible] and [illegible] who have great athletic [illegible] at great

muscles at the sides of the waist, he is almost sure to have small but fine serratus muscles.

One reason why this muscle control practice is so valuable is because it brings you into close acquaintance with muscles which are neglected in other training systems. In the editorial in the first part of this issue you are given a few exercises for *head* muscles. The one shown in figures VI and VII is an excellent development of the serratus.

It is a well known fact to those who have specialized on the subject, that the *experts*—the professional or amateur strong men—can display the strength of extraordinary men. Not because their muscles are so much bigger than those of their weaker competitors, but because they use so many more of their muscles, and use the proper muscles at the right time. There are ways of doing feats by using the arms only, which give small results and great exertion—and there are other ways of reinforcing the arms with the strength of the body muscles which control and actuate the upper arms, which transforms the stunt from a feat of arm strength, to a feat of *body* strength. In the latter case the exertion is far less and the results obtained are *many times* greater. The moral is that by learning how to use your body muscles you can double and perhaps triple the amount of force you can put in an arm movement.

There is nothing better than the muscle control to learn your body muscles under your command.

CONTROL OF THE BREAST MUSCLES

One of the principal functions of the pectoral muscles which are the superior muscles of the breast, is to bring the arms toward and together. If you hold the arms straight across them in front of you the pectoral muscles are contracted, and whose in two hard lumps of muscle, that is if the muscles have the development to start with.

The easiest way to learn to control them is to place the arms or the hands together as in Figure XVI and then press the hands together as hard as possible. That is bound to make the pectoral muscles contract to the limit. Try this in front of

[illegible] Nat

[illegible] an [illegible] that just as [illegible] is a [illegible] to press [illegible] with the words [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [

[illegible]

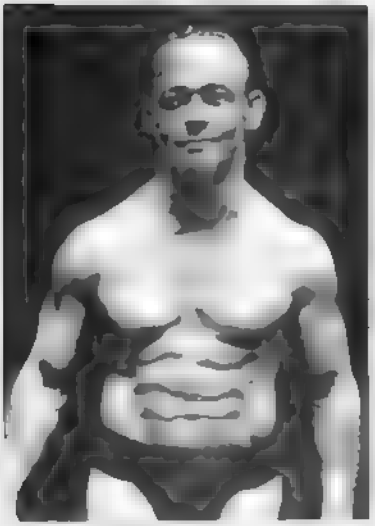
You can use it as a [illegible] and [illegible] the muscles [illegible] to these which [illegible] strength [illegible] muscles [illegible] to further [illegible] **freedom from fatigue**

You can employ it to increase your [illegible] of the [illegible] whole: which [illegible]

[illegible]

[illegible]

[illegible]



one, or surprise him in some position which [illegible] the [illegible] in a new way.

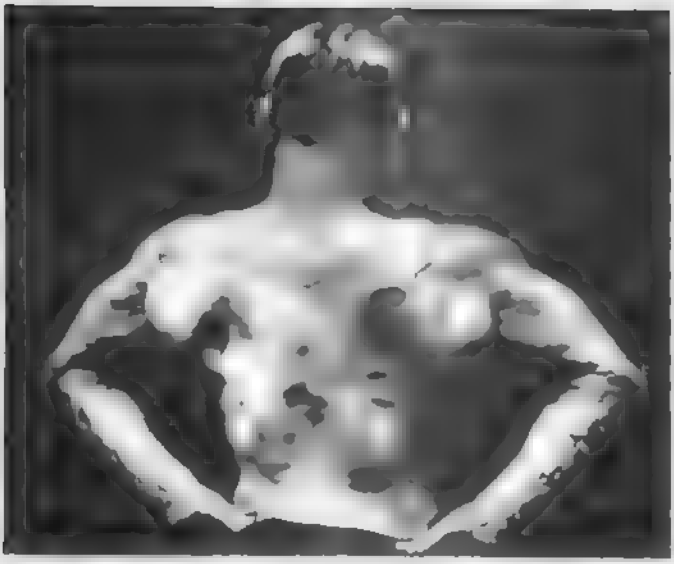
[illegible]

[illegible] the upper fibres [illegible] muscle; resembling [illegible] ing of their own weight.

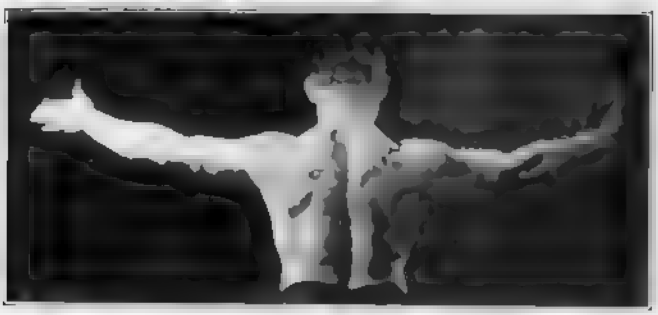
[illegible]

[illegible]

Figure XXV. [illegible] of Mr. Scott. He watched Arco [illegible] and he [illegible] the play of the [illegible] muscles [illegible] that [illegible] that [illegible] Arco [illegible] the hand [illegible] Scott [illegible] the [illegible] the [illegible] the



How to Learn Muscle Control.



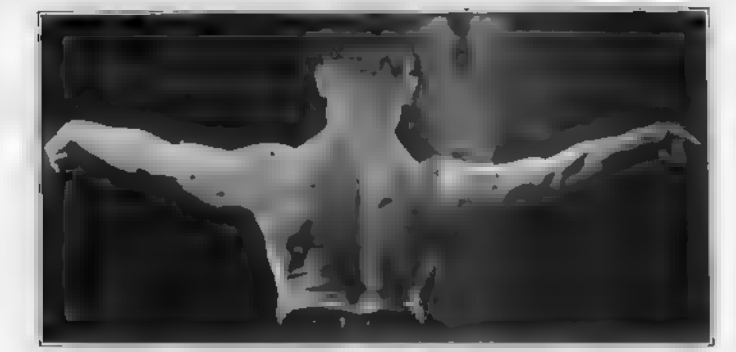
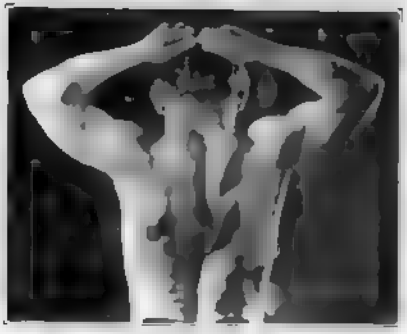


Figure XXXI

[illegible] the muscles [illegible] and [illegible] [illegible] [illegible]



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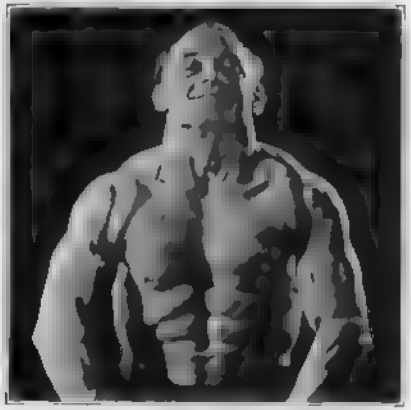
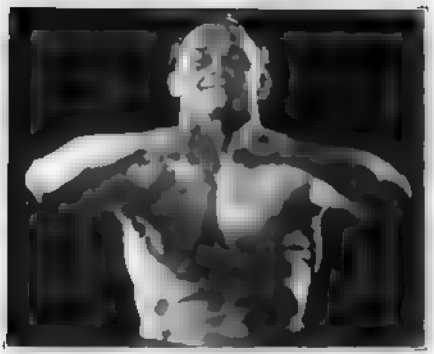
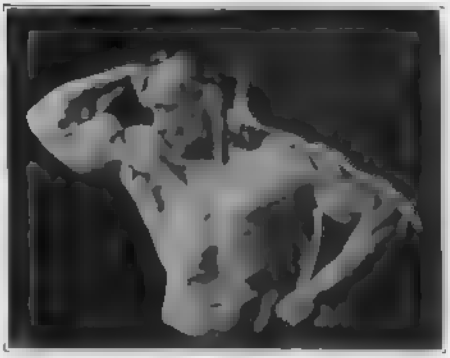


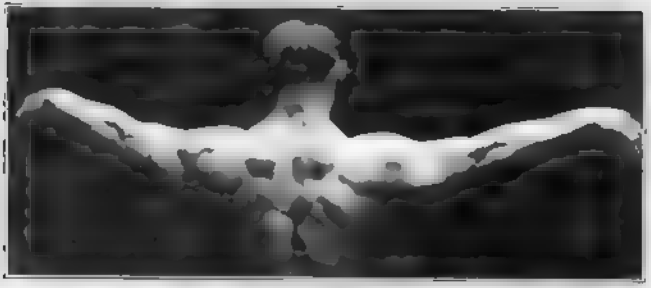


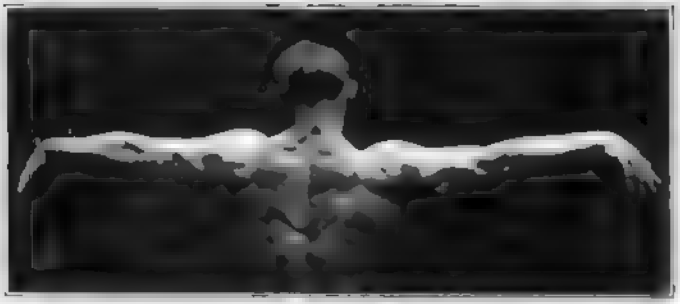
[illegible]

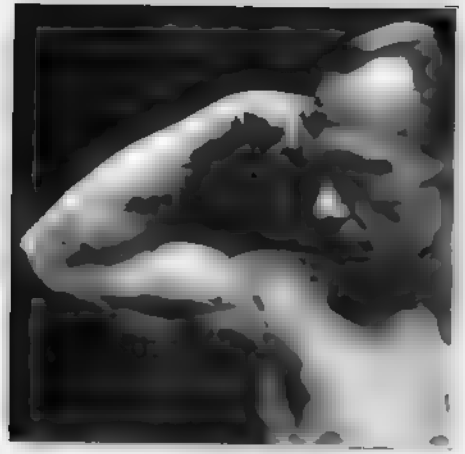
[illegible]



How to Learn Muscle Control







ADVANCED BICEPS CONTROL

Figure 1.

it by pushing strongly away with the hand, and by putting his thumb in the power position shown. I can't tell you how to do it—can't explain it. It must be partly due to the amount of tension you put on the muscle. It isn't easy. We took four shots with the camera before we got it. The strain of concentration is relieved in the facial expression.

In getting control the foregoing is about all you need. Of course, there are other display stunts which can be suggested. An effective one is to face your audience; clasp your hands on top of your head and alternately flex and relax the biceps; first simultaneously; then right flexed, left relaxed; and then vice-versa *rapidly*. Putting the hands on the head lets you fully relax the biceps and make the subsequent contractions seem greater by comparison. When you bend the arm and hold the elbows up, there is bound to be some tension on the muscles which raise the arm; among which is the biceps. When you rest the hands on the crown of the head that supports enables you to relax the muscles fully. That is one of the little things which are a help to beginners.

(And by the way, you probably recognized Figure XLIX. It was used in the first circular announcing this magazine. Also it is part of the full-length picture of Arco which appeared on page 25 of "THE BROAD OF THE BACK." The arm was not so noticeable in that pose because it seemed to fit in so exactly with the width of the shoulders and the breadth of the back. When I wanted a picture of Arco's arm for the circular, I reproduced only that part of the photograph shown in XLIX. I centered the picture so that I practically compelled you to fix your gaze on the shoulder and upper-arm. Arco himself says that he thinks it is a wonderful view of his arm.)

THE FORE-ARM

If you have ever studied pictures of well-muscled athletes, or if you

have examined your physique by aid of a mirror, you must have noticed that it is hard to make the forearm and upper-arm look big at the same time.

When the upper-arm looks its biggest, the forearm is almost bound to look small, because you see it from the side (XLVI). On the contrary when you fix your arm so that the forearm seems very big, you are disappointed to note that the position is not the best for displaying the upper-arm. Perhaps the best combined effect is when the arm is bent half-way, as in XLIX, for then if you have the control, you can make the biceps stand up, can also harden the triceps to put the curve on the under side of the arm, and make the forearm much wider than when the arm is fully bent.

FIGURE LI

What gives the breadth to the forearm in XLIX is the tightening of the supinator longus muscle. You will note on the picture that the lower edge of the forearm is one almost straight line, starting near the base of the thumb and cutting into the upper arm just in front of where the biceps start. The lower tendon of that muscle is fastened to the lower end of the *outer* bone of the forearm. Its upper tendon is fastened to the upper-arm bone, a couple of inches above the elbow. As its name implies it is one of the muscles which rotate the forearm; but because it crosses the elbow-joint, it helps bend the arm at the elbow when it contracts.

It is easy to get control of the supinator; in fact you may get it unconsciously while you are mastering the biceps. But it will not hurt to learn a little about its action. So stand facing your mirror; raise your arm to the side; bend it half-way at the elbow so that the forearm is perpendicular and palm of hand towards the mirror. Now tighten your biceps' muscle. As the biceps hump up, you will see the supinator tighten. The forearm near the elbow will suddenly become almost fifty per cent thicker than before. The ability to make the supinator stand out increases very quickly.

To make the forearm look its very biggest, it is necessary to flex and

Figure 131

control all of its muscles; as Arco is doing in 131. To duplicate the pose you have to bend your arm; tighten the supinator and then clench your fist and bend the wrist. As the palm of the hand is depressed then the hand itself must be rotated away from you, until the forearm is in what some call the "goose-neck position." You will never get those flexors on the *inside* of the forearm fully contracted if you merely bend the hand over. You have to rotate it as you bend. It enables you to contract the muscles so strongly that they cramp. And of course you have to do all that without once relaxing the supinator. You will be surprised how your forearm will actually build up by practicing this stunt. The gain in control is almost always accompanied with a gain in size and shape.

The foregoing reads more like an article on arm display than like a lesson in muscle-control. The answer is that muscle-posing (muscular display) is *based* on muscle-control. That part about the forearm is an instance. You can't get the display unless you can make the muscles do what you want them to do.

When I first saw Sandow-Aegit he gave the impression that he could alter the size and shape of his forearm at will. After doing the "goose-neck," he would open his hand, straighten the wrist and let all the forearm muscles go lax; and he would "goose-neck," relax; and repeat several times

quickly. His forearm seemed to literally double in size while you were watching it. This makes an ideal exercise providing you with alternate *full* contraction and *full* relaxation.

FIGURE LIII

There is an advantage about this muscle-control which makes a great appeal to the non-athletes; especially to the man who wants exercise without the fatigue and soreness which follows violent work. You can practice muscle-control to the limit, and finish up fresh. And if you have spent half the time in alternating relaxation with contraction you never have any sore muscles.

FIGURE XLIX